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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/803,247

03/09/2001

Simon C. Borst

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7590

09/14/2004

Ryan, Mason & Lewis, LLP  
90 Forest Avenue  
Locust Valley, NY 11560

EXAMINER

WILSON, ROBERT W

ART UNIT

PAPER NUMBER

2661

DATE MAILED: 09/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/803,247

Applicant(s)

BORST ET AL.

Examiner

Robert W Wilson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2001.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-22 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 05 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/9/01.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

**1.0** The application of Borst et. al. entitled DYNAMIC RATE CONTROL METHODS AND APPARATUS FOR SCHEDULING DATA TRANSMISSION IN A COMMUNICATION NETWORK was filed on 3/9/01 without foreign priority was examined claims 1-22 are pending.

### *Claim Rejections - 35 USC § 112*

**2.0** The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

**3.0** **Claims 1-22** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Referring to **Claims 1, 6, 21, & 22** respectively, the applicant claims a “maximum-rate user” which is not adequately described in the specification to enable one of ordinary skill in the art to make and use this invention. The specification does not define what is meant by “arg” on Pg 3 lines 14-16 and Pg 10 lines 12-14 of the specification where “m\*(n)” which is the “maximum-rate user” is defined. Since “arg” is not defined in the specification so that one of ordinary skill in the art then a “maximum-rate user after application of coefficients of a revenue vector” is not defined.

Referring to **Claim 7**, the applicant claims M users comprise a set of feasible rates ( $R_i, \dots, R_m$ ) having a discrete distribution on a bounded set J...? The specification defines R on Pg 14 line 26. Where in the specification does it define how one makes and uses “( $R_i, \dots, R_m$ ) having a discrete distribution ...”?

Referring to **Claim 8**, The applicant claims M users comprise a set of rates ( $R_i, \dots, R_m$ ) having a continuous distribution...”? The specification defines R on Pg 14 Line 26. Where in the specification defines does it define how one makes and uses “( $R_i, \dots, R_m$ ) having a continuous distribution ...”?

Referring to **Claim 17**, the specification defines an overview of the “Update-Extreme algorithm and a Move-to-Average algorithm” are defined on Pg 21 lines 1-5. Where in the specification

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does it explain how one makes and uses the “Update-Extreme algorithm and a Move-to-Average algorithm”.

Referring to **Claim 19**, the specification states that the adaptive algorithm can be utilized with antenna diversity on Pgs 29 lines 15-29 but does not describe details as to how one can make a use a scheduler which takes into account antenna diversity. Where in the specification does it explain how one makes and uses “scheduling steps are applied so as to take into account diversity antennas associated with one or more base stations of the communication network”?

### *Specification*

**4.0** The disclosure is objected to because of the following informalities:

**5.0** The disclosure is objected to because patent applications cited have matured into patents and this historical update is missing from the specification. The applications cited are 09/517,659 and 09/393,949

The disclosure is objected to because of insufficient disclosure because the specification claims a references by A. Bedekar on Pg 1 line 31 and P.Bender on Pg 2 lines 13 are incorporated references herein but the applicant never provided these references as a part of the IDS documentation.

The disclosure is objected to because in the equation on Pg 3 lines 14-17 “arg” is not defined in the disclosure.

Appropriate correction is required.

### *IDS*

**6.0** The information disclosure statement filed 3/9/01 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

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The reference by Bender was not submitted by the applicant. The examiner recommends that the applicant also submit the reference by Bedekar also.

***Claim Rejections - 35 USC § 103***

**7.0** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**8.0** Claims 1-2, 4, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Tiedemann Jr. et. al. (U.S. Patent No.: 5,914,950)

Referring to **Claim 1**, Tiedemann, Jr. discloses: A method of scheduling data transmission in a communication network (The CHANNEL SCHEDULER 12 per Fig 2 is inside the BASE STATION and receives scheduling requests from the REMOTE STATION 6 per Fig 2 which are in a communication network or per col. 6 lines 16-63) comprising the steps of:

Identifying for a given transmission interval a particular user from among a plurality of users requesting data transmission (The CHANNEL SCHEDULER 12 per Fig 2 identifies a RATE which an REMOTE STATION can utilize within a Frame or within K frames based upon requests from the user per col. 6 lines 40-44 and col. 7 lines 27-39) and col. 12 line 66-col. 13 line 33).

The particular user being identified as a maximum-rate user after application of coefficients of a revenue vector to corresponding feasible rates of a plurality of users, the revenue vector being determined in an iterative manner using an adaptive algorithm (The reference teaches a CHANNEL SCHEDULER which receives requests for maximum rates from REMOTE STATIONS. The CHANNEL SCHEDULER iteratively calculates the maximum rate that each REMOTE STATION can be granted based upon an equation for a given frame or K frames or intervals per col. 10 line 21-col. 13 line 33. )

Tiedemann does not expressly call for: a coefficient of revenue vector but teaches an equation which is iteratively used to calculate the maximum rate for a REMOTE STATION.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the equation of Tiedemann performs the same function as the calculation of the coefficient of revenue vector and furthermore it would have been obvious to write the equation of Tiedemann in vector notation instead of as an equation.

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**In Addition Tiedemann Jr teaches:**

Regarding **Claim 2**, wherein the communication network comprises a wireless communication system, and the data transmission comprise downlink data transmission from a given base station to users of the system (Fig 2)

Regarding **Claim 4**, wherein the adaptive algorithm starts from an arbitrary initial revenue vector and iteratively adjusts the coefficients of the revenue vector to compensate for observed deviations between actual and target through, such that the deviations are reduced over time and the revenue vector converges to an optimal revenue vector (The equations utilized by the schedule are started with an arbitrary initial gamma values and are adjusted until the Summation of the value of Gamma times  $T_i$  divided by  $W$  is less than the maximum channel capacity per col. 9 line 25-col. 12 line 67)

Referring to **Claim 20**, Tiedemann Jr. teaches: An apparatus for scheduling data transmission in a communication network (The CHANNEL SCHEDULER 12 per Fig 2 or apparatus is inside the BASE STATION and receives scheduling requests from the REMOTE STATION 6 per Fig 2 which are in a communication network or per col. 6 lines 16-63) comprising:

A base station having at least one processing device associated therewith (The CHANNEL SCHEDULER 12 per Fig 2 or processing device is inside the BASE STATION)

The at least one device being operative to identify for a given transmission interval a particular user from among a plurality of users requesting data transmission (The CHANNEL SCHEDULER 12 per Fig 2 or device identifies time is a frame or  $K$  frame as well as the maximum rate each REMOTE STATION or user can achieve per col. 7 lines 27-col. 13 line 32)

The particular user being identified as a maximum rate user after application of coefficients of a revenue vector to corresponding feasible rates of all of the users (The reference teaches a CHANNEL SCHEDULER which receives requests for maximum rates from REMOTE STATIONS or users. The CHANNEL SCHEDULER iteratively calculates the maximum rate that each REMOTE STATION can be granted based upon an equation for a given frame or  $K$  frames or intervals per col. 10 line 21-col. 13 line 33. )

The revenue vector being determined in an iterative manner using an adaptive algorithm (The equation is iteratively and adaptively utilized to calculate the maximum rate that each user can utilized per col. 10 line 21-col. 13 line 33)

And to schedule a data transmission of the particular user for the given transmission interval (The CHANNEL SCHEDULER calculates the max rate that each REMOTE STATION or user can utilize in a FRAME or  $K$  FRAMES or interval per col. 10 line 21-col. 13 line 33)  
Tiedemann does not expressly call for: a coefficient of revenue vector but teaches an equation which is iteratively used to calculate the maximum rate for a REMOTE STATION.

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It would have been obvious to one of ordinary skill in the art at the time of the invention that the equation of Tiedemann performs the same function as the calculation of the coefficient of revenue vector and furthermore it would have been obvious to write the equation of Tiedemann in vector notation instead of as an equation.

Referring to **Claim 21**, Tiedemann Jr. teaches: An apparatus for scheduling data transmission in a communication network (The CHANNEL SCHEDULER 12 per Fig 2 or apparatus is inside the BASE STATION and receives scheduling requests from the REMOTE STATION 6 per Fig 2 which are in a communication network or per col. 6 lines 16-63) comprising:

A processor operative to identify the given transmission interval a particular user among a plurality of users requesting data transmission (The CHANNEL SCHEDULER 12 per Fig 2 has a CONTROLLER 92 per Fig 3 or processor)

The particular user being identified as a maximum rate user after application of coefficients of a revenue vector to corresponding feasible rates of all of the users (The reference teaches a CHANNEL SCHEDULER which receives requests for maximum rates from REMOTE STATIONS or users. The CHANNEL SCHEDULER iteratively calculates the maximum rate that each REMOTE STATION can be granted based upon an equation for a given frame or K frames or intervals per col. 10 line 21-col. 13 line 33. )

The revenue vector being determined in an iterative manner using an adaptive algorithm (The equation is iteratively and adaptively utilized to calculate the maximum rate that each user can utilized per col. 10 line 21-col. 13 line 33)

And to schedule a data transmission of the particular user for the given transmission interval (The CHANNEL SCHEDULER calculates the max rate that each REMOTE STATION or user can utilize in a FRAME or K FRAMES or interval per col. 10 line 21-col. 13 line 33)  
Tiedemann does not expressly call for: a coefficient of revenue vector but teaches an equation which is iteratively used to calculate the maximum rate for a REMOTE STATION.

A memory coupled to the processor, the memory storing at least a portion of the revenue vector (MEMORY ELEMENT 94 per Fig 3 which stores CAPACITY INFORMATION which is utilized in the equation which performs the same function as the revenue vector)

It would have been obvious to one of ordinary skill in the art at the time of the invention that the equation of Tiedemann performs the same function as the calculation of the coefficient of revenue vector and furthermore it would have been obvious to write the equation of Tiedemann in vector notation instead of as an equation.

Referring to Claim 22, Tiedemann Jr. teaches: A machine-readable storage medium for storing one or more programs for use in a scheduling data transmission in a communication network (It

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is within the level of one skilled in the art to implement the functions defined for the CHANNEL SCHEDULER 12 per Fig 2 in hardware and with software or programs. It would have been obvious to one of ordinary skill in the art at the time of the invention to store the program on a machine-readable storage medium so that it could be executed on a processor) wherein the one or more programs when executed implement the steps of:

Identifying for a given transmission interval a particular user from among a plurality of user requesting data transmission (The Channel SCHEDULER 12 per Fig 2 determined the maximum rate per REMOTE STATION request that can be utilized by a user in a FRAME or K FRAMES or interval per col. 10 line 21-col. 13 line 33)

The particular user being identified as a maximum rate user after application of coefficients of a revenue vector to corresponding feasible rates of all of the plurality of all users (The reference teaches a CHANNEL SCHEDULER which receives requests for maximum rates from REMOTE STATIONS or users. The CHANNEL SCHEDULER iteratively calculates the maximum rate that each REMOTE STATION can be granted based upon an equation for a given frame or K frames or intervals per col. 10 line 21-col. 13 line 33. )

The revenue vector being determined in an iterative manner using an adaptive algorithm (The equation is iteratively and adaptively utilized to calculate the maximum rate that each user can utilized per col. 10 line 21-col. 13 line 33)

scheduling data transmission of the particular user for the given transmission interval (The CHANNEL SCHEDULER calculates the max rate that each REMOTE STATION or user can utilize in a FRAME or K FRAMES or interval per col. 10 line 21-col. 13 line 33)

Tiedemann does not expressly call for: a coefficient of revenue vector but teaches an equation which is iteratively used to calculate the maximum rate for a REMOTE STATION.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the equation of Tiedemann performs the same function as the calculation of the coefficient of revenue vector and furthermore it would have been obvious to write the equation of Tiedemann in vector notation instead of as an equation.

### ***Claim Rejections - 35 USC § 101***

#### **10.0 35 U.S.C. 101 reads as follows:**

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 22 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.



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Claim 22 is directed toward non-statutory subject matter because the claim does not claim computer executable instructions on a machine readable storage medium. Claim 22 claim a machine-readable storage medium.

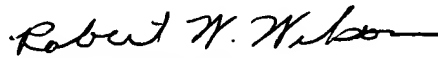
***Conclusion***

11.0 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W Wilson whose telephone number is (703) 305-4102.

The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

  
Robert W Wilson  
Examiner  
Art Unit 2661

RWW

September 1, 2004

  
DANGSTON  
PRINCIPAL EXAMINER